BOTANICA

THE BEGONIACEAE OF COLOMBIA (*)

By LYMAN B. SMITH and BERNICE G. SCHUBERT
Gray Herbarium of Harvard University, Cambridge, Massachusetts.

24. **Begonia (§ Poecilia) semiovata** Liebm. Herbaceous, slender, 2-6 dm. high; stem simple or slightly branched, essentially glabrous or glabrescent, prostrate to ascending, sometimes rooting at the nodes; leaves strongly asymmetric, straight (or rarely transversely ovate), acuminate, unequally cuneate to cordate at base, subpinnately nerved, occasionally shallowly lobed with ciliate-serrate margins, 4.5-7 cm. long, 1.5-2 cm. wide, essentially glabrous on both surfaces, petioles 0.5-2 cm. long, glabrous, stipules persistent, lanceolate, up to 2 cm. long, entire, glabrous, acuminate; peduncles axillary, 2-3 cm. long, glabrous; cymes laxly few-flowered; bracts persistent, lanceolate to ovate, subentire to ciliate-serrulate, 1-2 mm. long; staminate pedicels very slender, to 6 mm. long; staminate tepals 2, ovate to suborbicular, 2 mm. long and broad; stamens free, few, anthers elliptic or ovate, the connective produced; pistillate bracteoles persistent, obovate to orbicular, entire to ciliolate-serrulate to almost lacerate, about 3 mm. long; pistillate pedicels to 5 mm. long; pistillate tepals 5, elliptic to ovate, 2-3 mm. long, varying in width; styles 3, 2-parted with the stigmatic tissue forming a continuous, linear, spiral band, ovary 3-celled, placentae variable, even in the same ovary; capsule subelliptic to orbicular, glabrous, 6-14 mm. long, with subequal, rounded wings, seeds stalked, oblong and obtuse, truncate at the base, 0.2-0.3 mm. long.—Mexico and Guiana to Perú.—Liebm. in Kjoeb. Vidensk. Meddel. 1852. 22(1853); A. DC. in DC. Prod. xv. pt.

(*) Continued from page 38.

1, 382(1864). *B. rosea* (Kl.) A. DC. loc. cit. 299. *Hoffmannella rosea* Kl. in A. DC. loc. cit. nomen. *B. Spruceana* A. DC. in Ann. Sci. Nat. ser. 4, xi. 142(1859); in DC. Prod. xv. pt. 1, 381(1864); Smith & Schubert in Field Mus. Pub. Bot. xiii. pt. 4, no. 1, 199(1941). *B. flexuosa* A. DC. in Ann. Sci. Nat. loc. cit.; in DC. Prod. xv. pt. 1, 382. *B. guyanensis* A. DC. in Ann. Sci. Nat. loc. cit.; in DC. Prod. xv. pt. 1, 381(1864); Irmscher in Engl. & Prantl, Nat. Pflanzenfam. ed. 2, xxi, 581(1925). *B. guyanensis,* var. *glaberrima* C. DC. in Bot. Gaz. xx. 540(1895). Tab. 8.

SANTANDER: along creek on moist shaded bank, virgin forest, vicinity of Barranca Bermeja, Magdalena Valley, between Sogamoso and Carare Rivers, alt. 100-500 m., June 29, 1936, *Haught 1889* (G, US).

CHOCO: between La Oveja and Quibdó, April 1, 2, 1931, *Archer 1695* (US); La Concepción, 15 km. east of Quibdó, alt. ca. 75 m., April 20-May 23, 1931, *Archer 1953* (US).

VALLE: exposed cliffs, Pacific coast, Buenaventura, alt. 0-10 m., Oct. 5-10, 1922, *Killip 11689* (NY); woods, Pacific Coast, Río Yurumanguí, Veneral, alt. 5-50 m., Jan.-Feb., 1944, *Cuatrecasas 15855* (G); Río Calima (Chocó region), La Trojita, alt. 5-50 m., Feb.-Mar. 1944, *Cuatrecasas 16432* (G); stream-bed, Río Sabaletas, Sabaletas, km. 29 of highway from Buenaventura to Cali, alt. 25 m. June 4, 6, 1944, *Killip & Cuatrecasas 38860* (US).

NARIÑO: Prov. de Barbacoas, alt. 250 m., May, 1853, *Triana (17)* (Herb. Nac. Colomb.).

Begonia semiovata can be distinguished from its relatives in Colombia by the nearly equal wings which give the capsule an orbicular outline. From *B. subcostata, B. semiovata* differs notably in having its essentially glabrous leaves lobate and dimidiate and in having the anther-connective only slightly produced beyond the loculi.

For each of the names which we have placed in the synonymy of *B. semiovata* we have examined either an authentic specimen or a type-photograph. There was no way in which the capsule or leaf-form could be distinguished between these species. In this section the condition of the placentae as well as the number of pistillate tepals seem to be poor diagnostic characters.

25. **Begonia (? § Poecilia) subcostata** Rusby. Herbaceous, rhizomatous, about 4.5 dm. high; stem branched, ascending, finely ridged,

glabrous; leaves subobliquely ovate, long acuminate, rounded to truncate at base, coarsely serrate and somewhat ciliate above the base, 3-8 cm. long, 1-2.5 cm. wide, venation subpalmate, both surfaces with a few scattered short thick hairs, petiole glabrous, 2-4.5 cm. long, stipules somewhat persistent, obliquely ovate, acute, ca. 3 mm. long and 2.5 mm. broad, glabrous, their margins short-lacerate; peduncles axillary, glabrous, 2-2.5 cm. long; inflorescence composed of few-flowered cymes; bracts small, more or less persistent, usually ovate and with somewhat lacerate-ciliolate margins; pedicels 8-23 mm. long; staminate tepals 4, the outer 2 orbicular, entire, up to 8 mm. long and broad, the inner 2 slenderly elliptic, obtuse, ca. 7 mm. long, 2 mm. broad; stamens free, connective produced, some times equaling anther in length; pistillate bracteoles linear to oblong with a setose tip, sometimes broader above and incised, up to 1 mm. long excluding tip; pistillate tepals 5, the outer orbicular, up to about 5 mm. long and 4 mm. wide, becoming progressively narrower and more acute, the smallest 5 mm. long and 1.5 mm. wide; styles 3 with 2 main branches and several smaller ones, each branch with the stigmatic surface at its apex, ovary 3-celled, placentae simple, ovuliferous throughout; capsule up to about 1 cm. long, largest wing to about 6 mm. wide, acute, the two small wings subequal; seeds oblong, apparently not stalked, surface alveolate, alveolae the same size throughout.—Endemic.—Rusby, Descr. S. Am. Pl. 67(1920). Tab. 8.

MAGDALENA: local and not common, on wet rock by stream, forest and clearing, Las Nubes, Santa Marta, alt. 1350 m., Dec. 15, 1898 or 1899, *H. H. Smith 1265* (NY, type; G. US).

Begonia subcostata may be distinguished at once from the species here placed near it by its almost glabrous, essentially straight and unlobed leaves, by the four tepals of its staminate flowers and by the anther-connective which is usually produced far beyond the locules although its length is variable, even in one flower. The styles in this species are multifid, in the three species here associated with it bifid.—The seeds are sessile here, stalked in the other three species.

26. **Begonia (§ Poecilia) filipes** Benth. Herbaceous, 2-6 dm. high; stem simple to slightly branched, glabrous, finely ridged; leaves strongly asymmetric, semiovate to obliquely or transversely ovate, acuminate, mostly truncate at base, palmately nerved with the chief veins branching divaricately above and with the margins crenate-

dentate and ciliate, 4-10 cm. long, 2-4 cm. wide, rather abundantly appressed-pilose above with long tapering hairs, essentially glabrous on lower surface, petiole 0.5-4 cm. long, glabrous, stipules mostly persistent, oblong-ovate, acute to acuminate to the setulose tip, 6-12 mm. long, 2-4 mm. wide, very thin, entire; peduncles axillary, up to 5 cm. long, glabrous; cymes few-flowered; bracts persistent, ovate-acute with setulose tip, up to 7 mm. long and 2 mm. wide; pedicels glabrous, 4-10 mm. long; staminate tepals 2, ovate-acute up to 3.5 mm. long and 2 mm. broad; stamens few, attached to a short column, connective slightly produced; bracteoles obovate, serrate-ciliate to 3.5 mm. long, more or less persistent; pistillate tepals 4 or occasionally 5, ovate-acute to orbicular, ca. 2 mm. long, slightly more than 1 mm. broad; styles 3, 2-parted, with the papillate stigmatic surface forming spiral bands, ovary 3-celled, placentae variable; capsule glabrous, 4-6 mm. long, the largest wing mostly obtuse, produced to 1 cm. in width, the other two subequal, narrow; seeds as in *B. semiovata*, but somewhat smaller.—Panama and Costa Rica to Colombia.—Benth. Bot. Voy. Sulph. 101(1844). Liebm. in Kjoeb. Vidensk. Meddel. 1852. 22 (1853); A. DC. in DC. Prod. xv. pt. 1, 300(1864); Hemsl. Biol. Centr.-Am. i. 495(1880); Standley in Contrib. U. S. Nat. Herb. xxvii. 277 (1928); in Field Mus. Pub. Bot. xviii. pt. 2, 741(1937). *B. hygrophila* C. DC. ex Th. Dur. & Pittier in Bull. Soc. Bot. Belg. xxxv. pt. 1, 265(1896). B. *hygrophila* var. *puberula* C. DC. op. cit. 266. *B mameiana* D. DC. in Smithson. Misc. Coll. lxix. no. 12 4(1919). *B. heterodonta* Rusby, Descr. New Sp. S. Am. Pl. 66 (1926). Tab. 8.

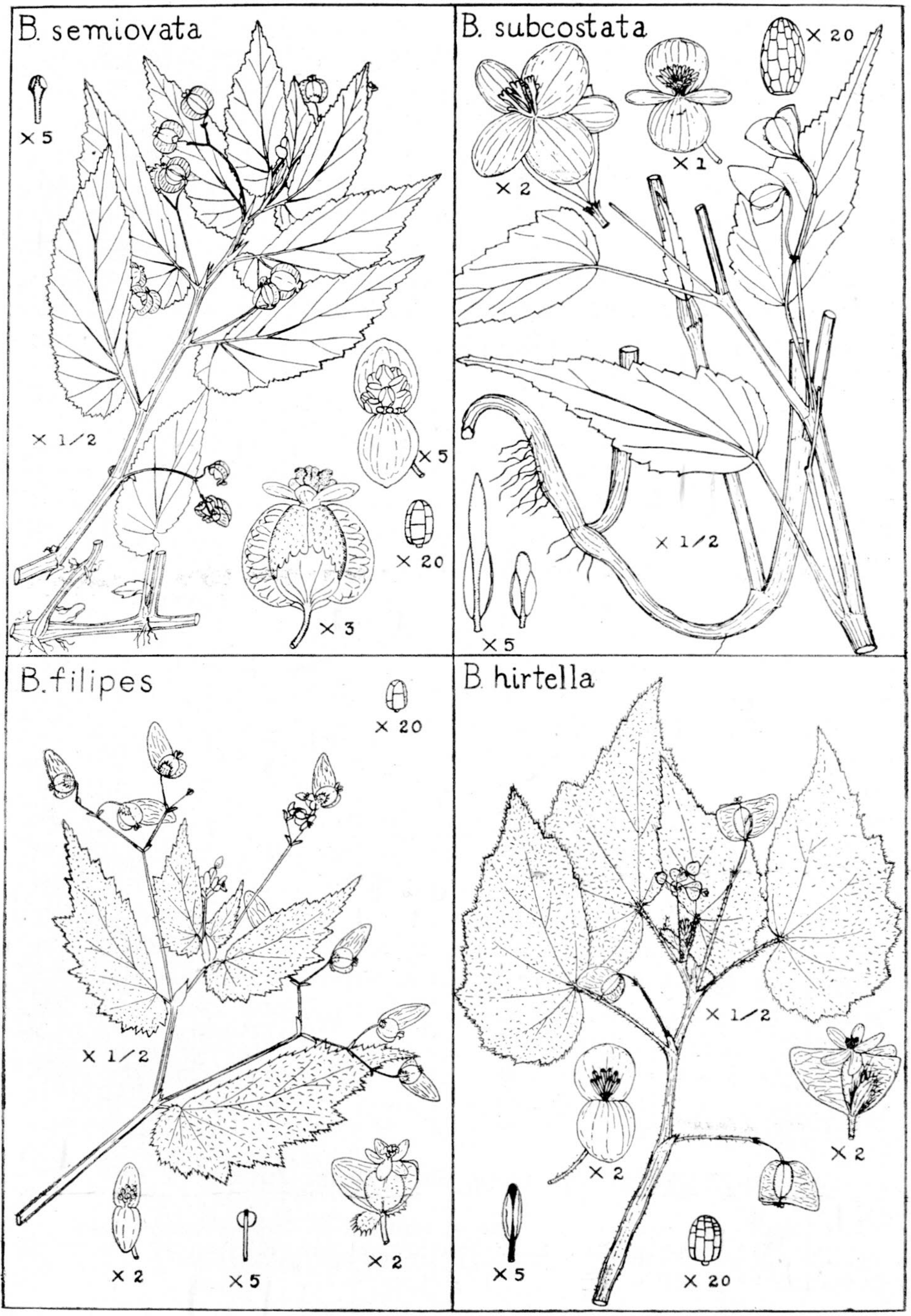
MAGDALENA: common on rocks in damp shady places about 300 m. from the Agua Dulce Road, alt. 240-260 m., Nov. 21, 1898-1901, *H. H. Smith 1244* (NY, type of *B. heterodonta* Rusby; G. US).

CHOCO or ANTIOQUIA: Atrato River basin, *Schott 208* (CM, labelled merely "South America", but he was nowhere else in South America).

ATLANTICO: Los Pendales, hacienda "Riodulce", alt. 20-50 m., in forest, Jan. 21-26, 1946, *Dugand & Jaramillo 4147* (Herb. Nac. Colomb.).

CHOCO: edge of forest along Quebrada Jella, Bahía Solano, near Ciudad Mutis, alt. 0-75 m., Feb. 21-23, 1939, *Killip & García 33602* (G).

From the two preceding species *Begonia filipes* may be separated by its leaves which are abundantly pubescent above. Its capsule, in which the largest wing is subdeltoid and ascending, distinguishes it


B. semiovata
× 5
× 1/2
× 5
× 20
× 3
B. subcostata
× 20
× 2
× 1
× 1/2
× 5
B. filipes
× 20
× 1/2
× 2
× 5
× 2
B. hirtella
× 1/2
× 2
× 2
× 5
× 20

TAB. 8

from all three of its Colombian relatives. In a co-type collection, the number of pistillate tepals varies, and in many specimens the placentae are variable in the same ovary.

27. **Begonia (§ Poecilia) hirtella** Link. Herbaceous, 2-9 dm. high; stem simple to branching, villous with slender, multicellular brownish hairs up to 2.5 mm. long; leaves strongly asymmetric, semiovate (when young) to transversely ovate, acute to acuminate, very shallowly cordate to almost truncate at base, 3-11 cm. long, 3-4.5 cm. broad, palmately nerved, shallowly or not at all lobed, moderately appressed-pilose on both surfaces, crenate-serrate and ciliate, petioles rather densely villous, 2-7 cm. long, stipules persistent, narrowly ovate, acuminate, 5-6 mm. long, lacerate-ciliate; peduncles axillary, sparsely pilose, 1.5-5 cm. long; cymes usually few-flowered; bracts persistent, linear to oblong or ovate, ciliate-lacerate, smaller than the stipules; pedicels essentially glabrous, 4-12 mm. long; staminate tepals 2-4, the outer suborbicular, up to 4 mm. long, the inner if present, smaller, lanceolate; stamens free, 9-22; pistillate bracteoles elliptic to subspatulate, ciliate-serrulate, 3.5-4 mm. long, not persistent in fruit; pistillate tepals 5, oblong to obovate, acute, ca. 2 mm. long; styles 3, 2-parted with the stigmatic tissue forming continuous linear spiral bands, placentae variable, seed-bearing throughout; capsule glandular-punctate, 10-14 mm. long with subdeltoid obtusely angled unequal wings, the largest 9-12 mm. wide; seeds oblong, obtuse, truncate and stalked at base, ca. 0.4 mm. long, surface alveolate, the basal alveolae longer than broad, the apical subrectangular. —West Indies, Brazil, Colombia and Perú.—Link, Enum. Hort. Berol. ii. 396(1822); A. DC. in DC. Prod. xv. pt. 1, 299(1864); Schulz in Urb. Symb. Ant. vii. 28(1911); Irmscher in Engler & Prantl, Nat. Pflanzenfam. ed. 2, xxi. 586(1925); Smith & Schubert in Field Mus. Pub. Bot. xiii. pt. 4, no. 1, 192(1941). *B. ciliata* HBK. Nov. Gen. & Sp. vii. 178(1825). *B. villosa* Lindl. in Bot. Reg. xv. t. 1252(1829). *B. diversifolia* Grah. β *nana* Walp. in Nov. Act. Acad. Leop.-Carol. xix. suppl. 1. 403(1843). *B. hirtella* Link var. *nana* A. DC. in Mart. Fl. Bras. iv. pt. 1, 345(1861). Tab. 8.

CUNDINAMARCA: Caparrapí, alt. 1280 m., June 8-13, 1939, *García 7727* (US).

TOLIMA: Santa Ana, near Mariquita, alt. 720 m., *Humboldt & Bonpland* (! A. DC.).

PUTUMAYO: wet woods in the valley of Río Afán, Mocoa, alt. 570-680 m., Dec. 27, 1940, *Cuatrecasas 11351* (G, US).

Begonia hirtella is the only member of this small group of species which is pubescent in most of its parts. The palmate venation of the usually transversely ovate leaves also serves as a distinguishing character; the largest capsule-wing which is very broad separates it from *B. filipes*. The seeds of *B. hirtella* differ from those of the three preceding species in having the apical alveolae subrectangular and the basal longer than broad.

28. **Begonia (§ Begoniastrum) microcarpa** A. DC., var. **typica.** Herbaceous, known only from upper portion of the plant, including a fragment of the stem which is somewhat villous; leaves asymmetric, obliquely to broadly elliptic to transversely ovate or suborbicular, abruptly acuminate, cordate at the base, 9-10 cm. long, 7.5-9.5 cm. broad, palmately 7-nerved, glabrous above, pubescent chiefly on the nerves beneath, margin shallowly lobed or slightly undulate, obscurely denticulate to entire, petioles 8.5-11 cm. long, abundantly villous, stipules persistent, deltoid ovate, cuspidate, 1-8 cm. long, entire, glabrous; peduncle axillary so far as is known, 1.4 dm. long, sparsely glandular; inflorescence laxly and somewhat irregularly cymose, ca. 8 cm. long, bracts elliptic, 4 mm. long, 2 mm. broad, obtuse, early deciduous; pedicels slender, to 11 mm. long, glandular; staminate tepals 4, entire, broadly ovate becoming more nearly elliptic in age, subapiculate, 3 mm. long and 2.5 mm. broad, stamens inserted on a column, filaments short, anthers subglobose, the connective not at all produced; pistillate bracteoles ovate-elliptic, obtuse, entire, 3 mm. long, 2 mm. broad; pistillate tepals 5, obovate, obtuse, the outer to 4 mm. long, 2.5 mm. broad; styles 3, persistent, short-connate at base, bifid with spiral stigmatic bands, ovary essentially globose, placentae bilamellate, ovuliferous throughout, wings subequal, similar, broadest at the middle and angled, a little over 1 mm. broad, seeds ellipsoidal, obtuse.—Ecuador.—A. DC. in DC. Prod. xv. pt. 1, 311 (1864). Tab. 9.

ECUADOR: in Andibus, 1857-9, *Spruce 5070* (Geneva, **type**; G. phot. (CM neg. 7344) **isotype**).

Var. **acuta** Smith & Schubert, var. nov., herbacea; caule ca. 3 dm. alto, decumbente, in nodis radicante, sparse longeque villoso,

demum paene glabro, foliis 6.5-8.5 cm. longis, 9-10 cm. latis, ut in varietate *typica* vel cum paucis trichomis supra, petiolis 6-12.5 cm. longis, stipulis oblongis, acutis ad apice paene setuloso, 1.5-2 cm. longis; tepalis masculinis exterioribus ad 6.5 mm. longis et 2.5 mm. latis; tepalis femineis plerumque ellipticis in maturitate, ad ca. 6 mm. longis et 2 mm. latis; ovario glabro, alis inaequalibus, acutis, supra horizontalibus inferne rotundatis, glanduloso-punctatis, maxima 6 mm. longa et 4.5 mm. lata. Tab. 9.

HUILA: Cordillera Oriental, woods, west slope below Gabinete in the valley of the Abra de San Andrés, alt. 1900-2100 m., Mar. 24, 1940, *Cuatrecasas 8606* (US, **type**; phot. G).

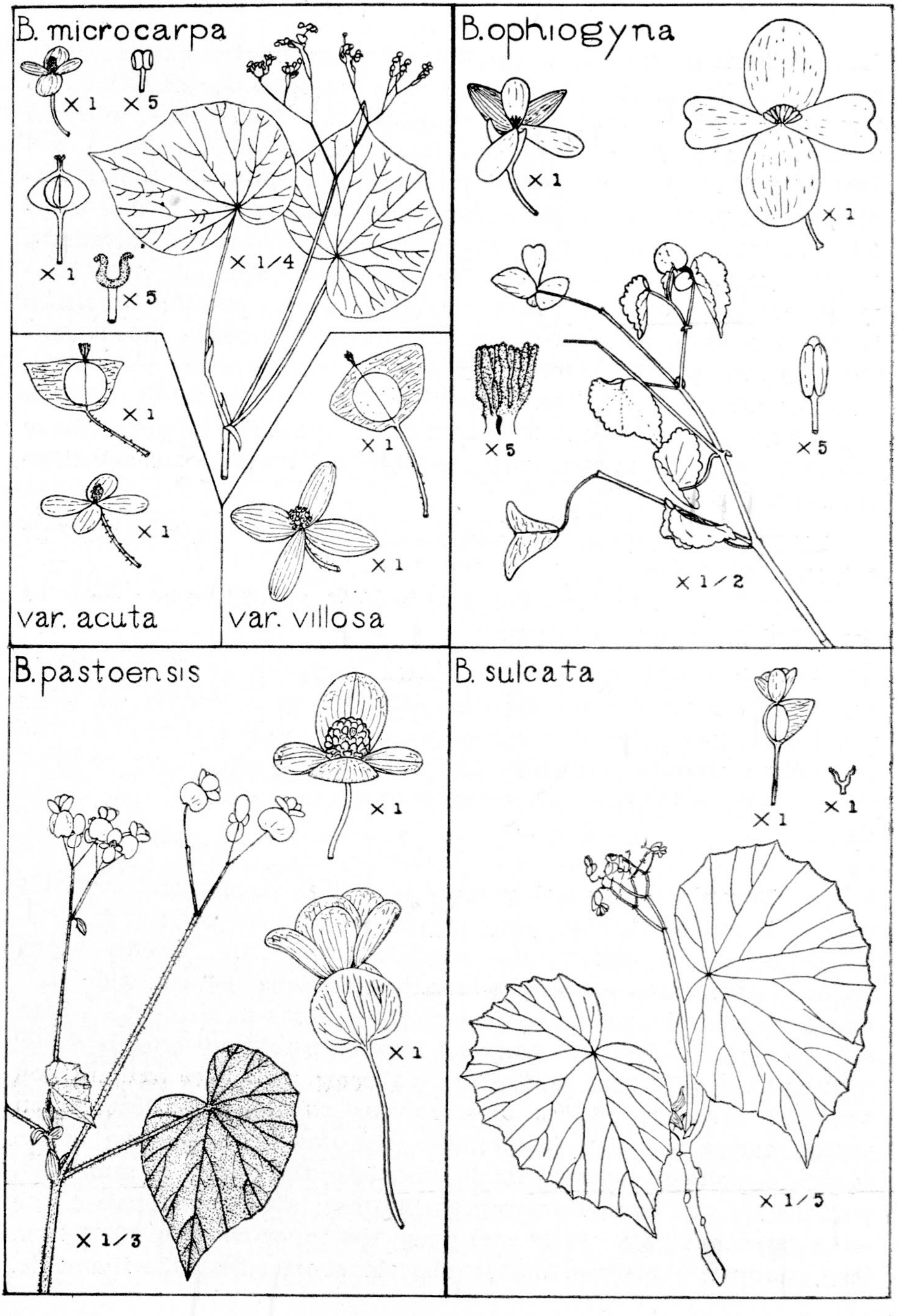
Var. **villosa** Smith & Schubert, var. nov., herbacea (! Cuatrecasas); caule ca. 3.5 dm. alto, simplice, non flexuoso, base decumbente radicante, villoso, demum glabro; foliis 10-12 cm. longis, 6.5-7.5 cm. latis, palmate 8-9—nervatis, supra glabrescentibus, subtus villosis densior in nervis, petiolis 7-10 cm. longis, stipulis lanceolatis vel deltoideo-lanceolatis, valde cuspidatis, ad 12 mm. longis; inflorescentiis 6 cm. longis, paucifloris, moderate villosis, bracteis ad 7 mm. longis; pedicellis juvenile dense villosis in maturitate glabrescentibus ad 15 mm. longis; tepalis masculinis exterioribus 9 mm. longis, interioribus 7 mm. longis; bracteolis femineis 4 mm. longis; tepalis femineis perjuvenilibus solum cognitis verisimiliter 5, certe 4, ovatis; ovario glanduloso-punctato, juvenili paullo villoso; alis inaequalibus, subacutis, supra descendentibus, inferne rotundatis, majoribus duabus 6 mm. latis, glanduloso-punctatis. Tab. 9.

VALLE: dense forest, El Silencio, Yanaconas, alt. 1900-2200 m., Feb. 28, 1939, *Killip & García 33768* (G, US).

CAQUETA: thicket, Cordillera Oriental, east slope, Sucre, banks of Río Hacha, alt. 1000 m., Apr. 3, 6, 7, 1940, *Cuatrecasas 9170* (US, **type**; phot. G).

Variety *villosa* differs from varieties *typica* and *acuta* in its villous pedicels which may also have sessile, but never stipitate, glands and in its glandular-punctate ovary and wings. In variety *acuta* the ovary is glabrous although the wings are glandular-punctate and in variety *typica* the whole capsule is glabrous.

29. **Begonia (? § Hydristyles) ophiogyna** Smith & Schubert, spec. nov., e fragmentis solum cognita, verisimiliter fruticosa, glabra;


B. microcarpa
× 1
× 5
× 1/4
× 1
× 5
× 1
× 1
var. acuta
× 1
× 1
var. villosa
B. ophiogyna
× 1
× 1
× 5
× 5
× 1/2
B. pastoensis
× 1
× 1
× 1/3
B. sulcata
× 1
× 1
× 1/5

TAB. 9

foliis obliquis ovatis, valde asymmetricis, acuminatis, basi cordatis, ad 35 mm. longis, 20 mm. latis, serratis vel crenatis, petiolis ad 35 mm. longis, stipulis subpersistentibus, ovatis, 3 mm. longis, integris; pedunculis axillaribus, 30-45 mm. longis; inflorescentia dioeca, 2-3 (vel -4?)-floris, bracteis persistentibus, parvis, ellipticis, rubris; pedicellis 15 mm. longis; tepalis masculinis 4, integris, exterioribus ellipticis, obtusis, 14 mm. longis, rubescentibus, interioribus obcordatis, 12 mm. longis, albis, staminibus liberis, antheris oblongis, quam filamentis longioribus, connectivo producto, ovato, obtuso; bracteolis femineis bracteis similibus; tepalis femineis 5, integris subaequalibus, 8-9 mm. longis; exterioribus ovatis, rubescentibus, interioribus obovatis, albis; stylis 3, liberis, multiramosis, ramis tortuosis, undique papilliferis; ovario 3-loculato, subturbinato, placentis bifidis, undique ovuliferis; capsulis 13 mm. longis, inaequaliter trialatis, alis subtriangularibus. Tab. 9.

MAGDALENA: Cerro Pintado, Sierra de Perijá, alt. 3100 m., July 3-6, 1942, *M. A. Carriker, Jr. 47* (US, **type**).

Note: *Carriker 21*, from the same locality, appears to be a dwarfed ecological form due to exposure.

Begonia ophiogyna is distinguished by having its inner staminate tepals obcordate and its five pistillate tepals sharply differentiated into two series, the outer two being ovate and reddish, the inner three obovate and white. The wings of the capsule are so thick that a sharp differentiation between ovary and wings is not always clear.

30. **Begonia (§ Huszia) pastoensis** A. DC. Herbaceous, probably not much over 3 dm. high; stem subsimple, with the petioles fulvous-pubescent; leaves oblique and strongly asymmetric, broadly ovate, abruptly acuminate, cordate at base, 5-9 cm. long, 3-6 cm. wide, palmately 7-9-nerved, undulate-denticulate, fulvous-puberulent on both sides, petiole slender, 5-7.5 cm. long, stipules persistent, broadly ovate, mucronulate, 8-12 mm. long, firm, glabrous; peduncles axillary and terminal, erect, to 12 cm. long, fulvous pubescent at least when young; cymes bisexual, dichotomous, few-flowered, glabrous; bracts tardily deciduous, obovate, ample, undulate, the lowest 10 mm. long, pedicels 1-3 cm. long; flowers probably rose; staminate tepals 4, the outer broadly elliptic, 12-16 mm. long, the inner obovate, 10-13 mm. long; stamens numerous, anthers obovoid, shorter than the filaments,

connective not produced, pistillate bracteolae persistent, orbicular, 8-10 mm. long, ample, concealing the ovary; pistillate tepals 5, obovate, 10-12 mm. long; styles 3, 2-branched, somewhat irregular, the stigmatic tissue linear, spiral, continuous; placentae bilamellate, the laminae irregularly 1-2-lobed, ovuliferous on all sides; capsule globose, unequally 3-winged, the wings all marginiform.—Ecuador.—A. DC. in Ann. Sci. Nat. sér. IV. 11:121. 1859; in DC. Prod. XV. pt. 1, 285 (1864). Tab. 9.

NARIÑO: near Pasto, alt. 2200 m., 1851-57, *Triana 3031* (Kew, **type,** Killip neg. no. 501; Geneva, **isotype,** CM. neg. no. 24198; NY, **isotype**); between Meneses and Pasto, Apr. 29, 1876, *André 2880* (NY).

Begonia pastoensis may be distinguished by the fulvous pubescence of its leaves and petioles, by the obtuse inner tepals of the staminate flower and by the large, persistent bracteoles of the pistillate flower. Its pistillate tepals, unlike those of *B. ophiogyna,* are not differentiated into two series, not are the two outer ones distinctly shorter as in *B. sulcata.*

31. **Begonia (§ Saueria) sulcata** Scheidw. Fruticose, about 1 m. high (! Haught); stem and branches sulcate, glabrous; leaves obliquely ovate, acute, shallowly cordate at base, palmately 6-7-nerved, 5-10 cm. long, 4-6 cm. wide, shallowly lobate, doubly crenate-serrate, ciliate, membranaceous, sparsely pilose at base on the nerves, petiole 2.5-7.5 cm. long, stipules deciduous, oblong, obtuse or mucronate, 16-18 mm. long, entire, membranaceous; peduncles axillary, at least 9 cm. long; inflorescence dichotomously much branched, flat-topped, 5-7 cm. in diameter; bracts persistent, falcate-spreading, linear-lanceolate, entire, 2-3 mm. long; pedicels slender, 6-10 mm. long; staminate tepals 4, white, the outer suborbicular, 6-8 mm. long, the inner obovate, 4-6 mm. long; stamens on a low torus, anthers oblong, slightly longer than the filaments, connective slightly produced, obtuse; pistillate bracteoles oblong, obtuse or acute, 2 mm. long; pistillate tepals 5, elliptic or obovate, 4-8 mm. long, the 2 outer distinctly shorter; styles 3, bifid, stigmatic tissue linear, spiral, continuous; ovary 3-celled, placentae bifid, ovuliferous throughout; capsule ellipsoid, unequal 3-winged, the largest sublunate, the others marginiform.—Endemic.—Scheidw. in Otto & Dietr. Allg. Gartenzeit. xvi. 130(1848); A. DC. in DC. Prod.. xv. pt. 1, 288(1864); Warb. in Engler & Prantl, Pflanzenfam. iii. Abt. 6a, 148(1894); Irmscher, op.

cit. ed. 2, xxi. 586(1925). *Saueria sulcata* Kl. in Monatsb. Berlin Akad. 122(1854); idem, Begon. 41, t. 2, fig. A (1855). Tab. 9.

MAGDALENA: forest above Manaure, alt. ca. 700 m., Jan. 23, 1944, *O. Haught 3983* (US).

Note: The species was described from material cultivated at Brussels and said to have come from Colombia (Herb. Brussels?, Berlin).

The characteristically entire bracts, many flowered inflorescence and large leaves of *B. sulcata* serve to distinguish it from *B. tovarensis,* while the presence of one large and well developed capsule-wing separates it from *B. pastoensis* in which the wings are all marginiform.

32. **Begonia (§ Begoniastrum) tovarensis** Kl. Herbaceous, 2-12 dm. high, sparsely brown-pilose to glabrous; stem erect, red; branches short; leaves more or less asymmetric, broadly ovate or suborbicular, acute or rounded, cordate at base, 2-9 cm. long, palminerved, crenate-serrate, ciliate, glabrous above, more or less brown-pilose beneath especially on the nerves, petioles 5-45 mm. long, stipules deciduous, ovate-oblong, to 10 mm. long, ciliate-serrulate; peduncles axillary, 15-55 mm. long; cymes bisexual, few-flowered; bracts persistent, ovate, 2-4 mm. long, fimbriate; pedicels 5-20 mm. long; staminate tepals 4, the outer orbicular, 8 mm. long, the inner smaller, narrowly obovate; stamens free, numerous, filaments short, anthers oblong, the connective produced, obtuse; pistillate bracteoles like the bracts; pistillate tepals 5, obovate, 3-6 mm. long; styles 3, bifid, the stigmatic tissue linear, spiral, continuous, placentae bilamellate, ovuliferous throughout; capsule 10-15 mm. long, its wings decurrent, very unequal, the largest typically ascending and tapering, often hooked, to 23 mm. wide, seeds fusiform.—Cuba; Mexico; Central America; Colombia; Venezuela; Perú; Bolivia.—Kl. Begon. 31 (1855); A. DC. in DC. Prod. xv. pt. 1, 303(1864). Hemsl. Biol. Centr.-Am. i. 500(1880); Schulz in Urb. Symb. Ant. vii. 25(1911). Knuth in Fedde, Rep. Beihefte, xliii. 502(1927). Standley in Field. Mus. Pub. Bot. xviii. pt. 2, 747(1937). Smith & Schubert, op. cit. xiii. pt. 4, no. 1, 200(1941); in Rev. Univ. Cuzco, xxxiii. no. 87, 80, t. 13, fig. 22(1945). *B. populifolia* sensu Liebm. in Kjoeb. Vidensk. Meddel. 1852. 16(1853); Kl. Begon. 30(1855), non HBK. *Begonia Moritziana* Kl. l. c. 31, non

Kunth & Bouché, 1848. *Begonia tovarensis* β *ocanensis* A. DC. in DC. Prod. xv. pt. 1, 303(1864). Tab. 10.

MAGDALENA: Santa Marta, 1898-1901, *H. H. Smith 2078* (G, NY, US).

SANTANDER: marshy land, Mesa de los Santos, alt. 1500 m., Dec. 11-15, 1926, *Killip & Smith 15298* (G, NY, US); in very wet soil by spring, vicinity of Barranca Bermeja, Magdalena Valley, between Sogamoso and Colorado Rivers, alt. 100-500 m., Mar. 10, 1935, *O. Haught 1595* (US).

CALDAS: Cauca Valley, swale west of Armenia, alt. 1100-1400 m., July 24-25, 1922, *Pennell, Killip & Hazen 8647* (NY, var.?, no fruit).

ANTIOQUIA: Prov. de Antioquia, Rionegro, Mar., 1853, *Triana (19)* (Herb. Nac. Colomb.).

CAUCA: Popayán, alt. 1750 m., *Lehmann 8031* (CM); swale, Río Sucio to Río Piedras, west fo Popayán, Cauca Valley, alt. 1500-1700 m., July 3, 1922, *Pennell & Killip 8218* (G, NY); Cauca Valley, moist wayside north of Popayán, alt. 1700-1750 m., July 12, 1922, *Pennell & Killip 8268* (NY, var.?, no mature fruit).

META: wet trail in forest, Villavicencio, alt. 450 m., Aug. 26-31, 1917, *Pennell 1479* (G, NY); Villavicencio, June 1937, *E. Pérez A. 5322* (US); same locality, alt. 500 m., Nov. 9, 1938, *Cuatrecasas 4502* (US); sabana, Apiay, Villavicencio, alt. 500 m., Nov. 12, 1938, *Cuatrecasas 4784* (US); woods, along Río Guatiquía, near Villavicencio, alt. ca. 500 m., Mar. 18-19, 1939, *Killip 34436* (G).

CAQUETA: Florencia, in woods, cerro de La Sardina, alt. ca. 500 m., Mar. 30, 1940, *Cuatrecasas 8903* (G).

DEPARTMENT UNKNOWN: Queremal, Jan. 4, 1935, *E. Pérez A. 3093* (US).

Begonia tovarensis is wide-ranging and rather variable but it may be easily determined by its combination of fimbriate bracts, few flowered inflorescence, large unequally winged fruit and fusiform seeds.

Var. **palustris** (Benth.) Smith & Schubert, comb. nov. Largest wing of capsule rounded, not ascending.—*Begonia palustris* Hartweg ex Benth. Pl. Hartweg. 184(1845). Tab. 10.

CUNDINAMARCA: swale in meadow, Zipaquirá, alt. 2650 m., Oct. 20-24, 1917, *Pennell 2543* (G, Mo, NY, US); swamp, Laguna de Fúquene, alt. 2600 m., Mar. 1930, *E. Pérez A. 65* (US).

HUILA: swale, "Balsillas" on Río Balsillas, alt. 2000-2100 m., Aug. 3-5, 1917, *Rusby & Pennel 717* (NY, US).

VALLE: Bitaco, alt. 1550 m., Aug. 15, 1939, *H. García B. 8035* (US).

CAUCA: "Ad fossas prope Popayán", *Hartweg 1022* (Kew, **type**; Berlin, **isotype,** phot. G (CM neg. no. 20902)

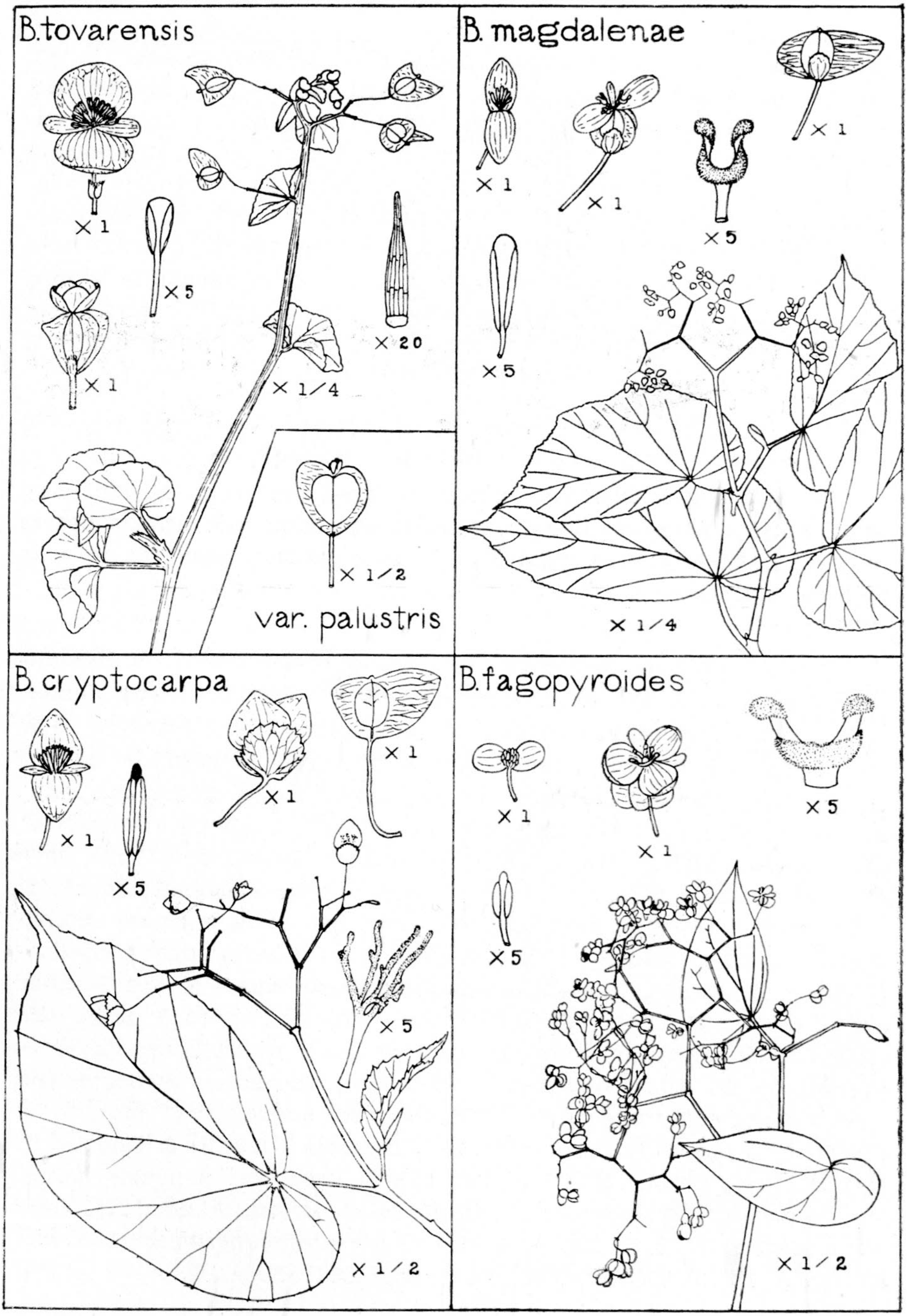
The character by which this variety is distinguished is very variable on a single plant and there are intergrades with the typical variety.

33. **Begonia (? §) magdalenae** Smith & Schubert, spec. nov., herba succulenta ad 1 m. alta (! Haught), glabra; caule flexuoso, internodiis ultra 8 cm. longis; foliis transversis vel valde obliquis, subellipticis, apice abrupte acuminatis, basi late cordatis, ad 17 cm. longis et 8.5 cm. latis, serratis, ad apicem versus sublobatis, petiolo 1-4 cm. longo, stipulis mox deciduis, ellipticis, ca. 2 cm. longis, integris; pedunculis axillaribus, 5-6 cm. longis; cymis multifloris, 10-11 cm. diametro, bracteis deciduis, linearibus, obtusis, 5 mm. longis; pedicellis 3-10 mm. longis; tepalis masculinis 2, ovatis, 7 mm. longis, integris, albis; staminibus ca. 13, subliberis, paucis, antheris oblongis, quam filamentis multo longioribus, connectivo producto, obtuso; bracteolis femineis suborbicularibus, grosse dentatis, quam ovario subduplo minoribus; tepalis femineis 3, exterioribus ellipticis, obtusis, interiori minore, lineari-obovato; stylis 3, bipartitis, stigmatibus spiraliter cinctis; ovario ellipsoideo, placentis bilamellatis; capsula inaequaliter 3-alata, alis triangulari-ovatis. Tab. 10.

MAGDALENA: in a tangled mass of lycopods, mosses, ferns and orchids in dense damp forest on mountains just east of Manaure, alt. 1900 m., Apr. 15, 1944, *O. Haught 4088* (G; US, **type**).

By its two staminate and three pistillate tepals, few anthers with obtuse connective, small bracteoles and bifid styles it is easy to differentiate between *B. magdalenae* and *B. cryptocarpa* which it resembles superficially.

34. **Begonia (? §) cryptocarpa** Smith & Schubert, spec. nov., e fragmentis solum cognita, verisimiliter suffruticosa, glabra; caule flexuoso; foliis valde obliquis, subellipticis, abrupte acuminatis, basi profunde cordatis, 10-14 cm. longis, 4-6.5 cm. latis, penninerviis, minute, denticulatis, rotundatis vel leviter angulatis, petiolo ad 35 mm. longo, stipulis deciduis, lanceolatis, cuspidatis, 12 mm. longis, mem-


B. tovarensis
× 1
× 5
× 1
× 20
× 1/4
× 1/2
var. palustris
B. magdalenae
× 1
× 1
× 5
× 1
× 5
× 1/4
B. cryptocarpa
× 1
× 5
× 1
× 1
× 5
× 1/2
B. fagopyroides
× 1
× 1
× 5
× 5
× 1/2

TAB. 10

branaceis, brunneis; pedunculo unico viso, axillari, 45 mm. longo; inflorescentia laxe cymosa, 8 cm. diametro, ca. 16-flora, bracteis deciduis; pedicellis ad 13 mm. longis; tepalis masculinis 4, integris, exterioribus late ovatis, acutis, basi cordatis, 9 mm. longis, interioribus oblongis, multo brevioribus; staminibus submultis, antheris linearibus, quam filamentis longioribus, connectivo producto, obtuso; bracteolis femineis orbicularibus, dentatis, 5-6 mm. longis, ovarium omnino occultantibus; tepalis femineis 2, late ovatis, subacutis, 8 mm. longis, integris, albis; stylis 3, multifidis, ramis spiraliter tortis, undique papilliferis, placentis bilamellatis, undique ovuliferis; capsula ellipsoidea, inaequaliter 3-alata, alis triangulo-ovatis. Tab. 10.

MAGDALENA: Santa Marta, alt. 1350 m., (fl. Aug. 22, fr. Dec. 18) 1898-1901, *H. H. Smith 1266* (G, **type**; NY, **isotype**).

Begonia cryptocarpa, so named because the fruit is hidden by the dentate bracteoles, also differs strikingly from the species closest to it in having four staminate and two pistillate tepals as well as multifid styles.

35. **Begonia (§ Begoniastrum) fagopyroides** Knuth & Bouché. Herbaceous, 3-12 dm. high, glabrous; stem flexuous; leaves transversely ovate, acuminate, cordate at base, palmately 7-8-nerved, 7-11 cm. long, 2.5-5 cm. wide, remotely and obscurely denticulate, petiole 1-4 cm. long, stipules deciduous, ovate-oblong, entire, 12-16 mm. long; peduncles axillary, 2.5-8 cm. long; cymes unisexual, many-flowered, dichotomous, globose, to 25 cm. in diameter; bracts deciduous, very minute; pedicels 5-15 mm. long; flowers white; staminate tepals 2, suborbicular, 4-5 mm. long; stamens on a low torus, anthers oblong, slightly shorter than the filaments, the connective produced, obtuse; pistillate bracteoles like the bracts; pistillate tepals 5, the 3 inner ovate, 4-5.5 mm. long, the outer much smaller; styles 3, bifid, the stigmatic tissue linear, spiral, continuous, placentae bilamellate, ovuliferous on all sides; capsules ovoid, acute, unequally 3-winged, the largest wing sublunate and slightly broader above, to 11 mm. wide, the other 2 narrowly marginiform.—Venezuela.—Kunth & Bouché in Ind. Pl. Hort. Berol. (1848); A. DC. in DC. Prod. xv. pt. 1, 289(1864). *Moschkowitzia fagopyroides* Kl. in Monatsb. Berlin. Akad. 127(1854); idem, Begon. 77, t. 8, fig. A. (1855). *Begonia fagopyroides β Fendleriana* A. DC. in DC. Prod. xv. pt. 1, 289(1864). Tab. 10.

NORTE DE SANTANDER: dense woods, Pica-Pica Valley, above Tapatá (north of Toledo), alt. 2100-2400 m., Mar. 1-5, 1927, *Killip & Smith 20213* (G, NY, staminate flowers only).

Note: The details on plate 10 were drawn after Klotzsch (Begon. t. 8, fig. A); the habit from a photograph (CM neg. 20887).

Although only fragmentary Colombian material of this species has been examined by us, it seemed to agree well with the photograph of authentic material, cultivated in Berlin. The species is distinctive because of its two outer pistillate tepals which are smaller than the inner. In addition it may be separated from *B. magdalenae* by its five pistillate tepals (rather than three) and minute, promptly deciduous bracteoles. From *B. cryptocarpa, B. fagopyroides* also differs in the character of its bracteoles as well as in its bifid styles and staminate flowers with only two tepals.

36. **Begonia (§ Scheidweileria) parviflora** Poepp. & Endl. Shrub or small tree, 2-4 m. high with simple trunk 4-5 cm. in diameter at base, slightly branched near the top, branches spreading, 6 dm. long; leaves palmate, subsymmetrical, shallowly or deeply 5-7-lobed with the lobes sometimes subdivided, cordate at base, 2-6 dm. wide, finely serrate, subglabrous and bright green above, gray green beneath and ferruginous-tomentose especially on the nerves, bearing cystoliths, petioles up to 6 dm. long, ferruginous-tomentose, stipules lanceolate, deciduous; inflorescences axillary and terminal, cymose, each composed of hundreds of flowers, 2-6 dm. broad, white (! Cuatrecasas), peduncle 3-6 dm. long, ridged and grooved, rather densely hirtellous, stout, white (! Cuatrecasas); bracts minute, deciduous; pedicels slender, lax, hirtellous, up to 2 cm. long; staminate tepals 4, elliptic or obovate, subequal, 3-4 mm. long; stamens on a low torus, anthers elliptic; pistillate tepals 5, elliptic, remotely serrate-setose, 4 mm. long; styles 3, 2-branched, the stigmatic tissue linear, spiral, continuous, ovary densely hirtellous becoming less so in age; placentae simple; capsule 10-12 mm. wide including the obcordate wings which are cuneate and ciliate becoming essentially glabrous at maturity, decurrent at base.—Ecuador, Perú, Bolivia.—Poepp. & Endl. Nov. Gen. & Sp. i. 7, t. 12(1835); A. DC. in DC. Prod. xv. pt. 1, 370(1864); Smith & Schubert in Field Mus. Pub. Bot. xiii. pt. 4, no. 1, 195(1941); in Rev. Univ. Cuzco, xxxiii. no. 87, 83, t. 14, fig. 46-48(1945). *Begonia micrantha* Steud. Nomencl. ed. 2, i. 194(1840). *Scheidweileria parvi-*

flora Kl. Begon. 59(1855). *Begonia myriantha* Britton in Bull. Torrey Club xviii. 35(1891). Tab. 11.

VALLE: dense forest, Río Digua Valley, between La Elsa and Río Blanco, alt. 880 m., Apr. 2-5, 1939, *Killip 34817* (G); woods, right bank near mouth of Río Digua, La Elsa, ravine La Cristalina, Cordillera Occidental, west slope, alt. 1000-1150 m. Sept. 30, 1943, *Cuatrecasas 15229* (G).

CAUCA: clearing along Río San Joaquín, alt. 1100-1300 m., June 29-30, 1922, *Killip 7837* (G, NY).

NARIÑO: Prov. de Túquerres, 2200 m. alt., *Triana (13)* (Herb. Nac. Colomb.).

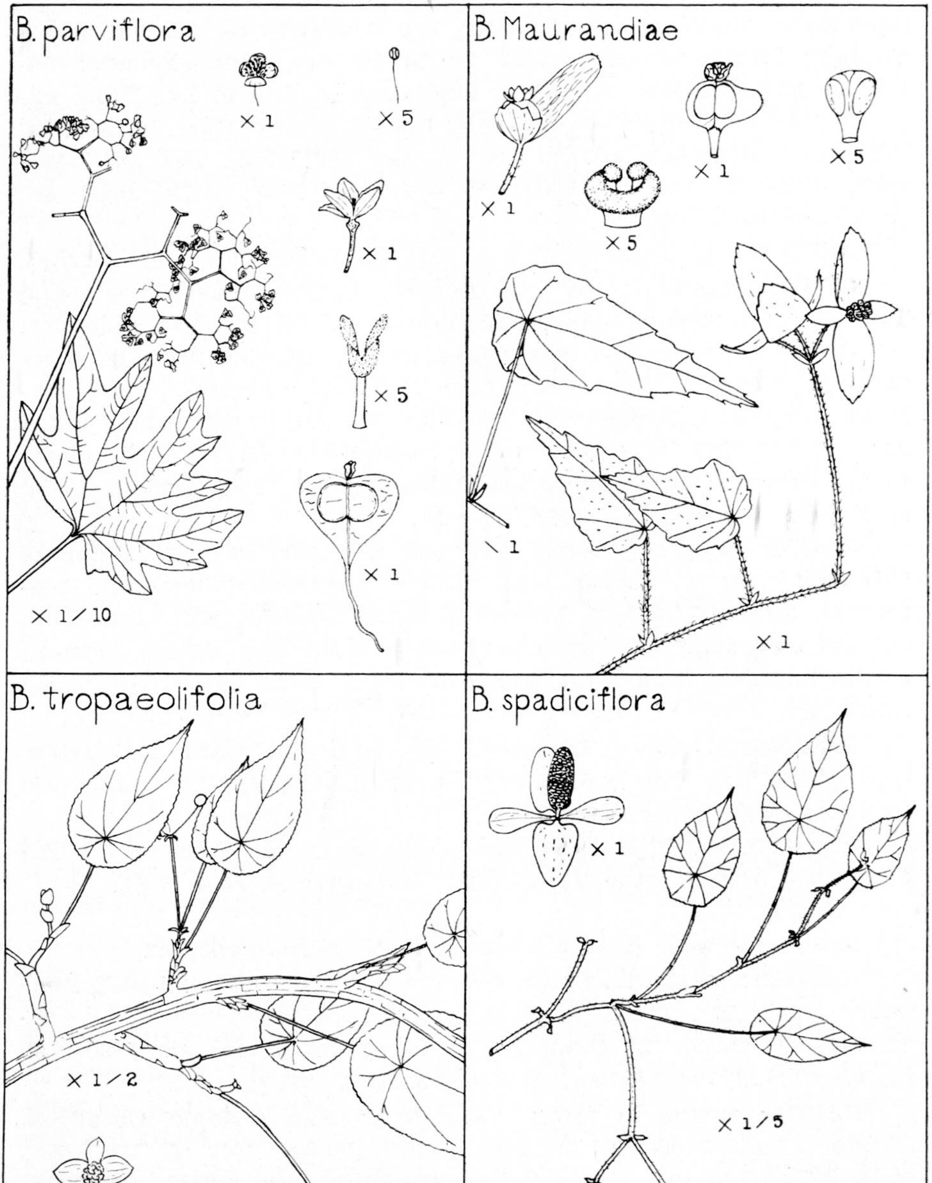
BOYACA: thick forest, region of Mt. Chapón, extreme western part of Boyacá, northwest of Bogotá, alt. 1350 m., June 3, 1932, *Lawrance 155* (NY).

PUTUMAYO: thickets, Cordillera Oriental, east slope, Sucre, banks of the Río Hacha, alt. 1000 m., April 7, 1940, *Cuatrecasas 9207* (US); moist woods in the valley of Río Mulato, alt. 570-600 m., Dec. 26, 1940, *Cuatrecasas 11311* (US).

NO LOCALITY: 1851-7, *Triana s. n.* (US).

With its very large lobate leaves, much branched inflorescences, tiny flowers and capsules with obcordate wings *B. parviflora* is easily distinguished.

37. **Begonia (§ Gobenia) Maurandiae** A. DC. Branching vine; branches slender, soon glabrous; leaves symmetrical, ovate, acuminate, at base from obtuse to cordate with overlapping or short peltate lobes, 1-7 cm. long, 8-nerved, laxly dentate, sparsely pilose above and chiefly on the nerves beneath, becoming glabrous, petioles 6-50 mm. long, pilose, stipules persistent, ovate, entire, brown, 2-6 mm. long; cymes axillary, few-flowered, pubescent, peduncles 1-4 cm. long, bracts persistent, elliptic, 2-4 mm. long; pedicels very slender, 5-20 mm. long, glabrescent to abundantly spreading pilose; staminate tepals 4, dentate, rose, the outer broadly elliptic, moderately long-pilose without, 8-15 mm. long, the inner shorter and obovate, stamens essentially sessile on a column, connective not produced; pistillate bracts suborbicular, nearly equaling the ovary, dentate; pistillate tepals 5-7, ovate, 2-3 mm. long; styles 3-4, very short, bifid-capitate, placentae bifid, ovuliferous throughout; capsule subglobose, its wings from subequal to very unequal in the same plant, all or the smaller


B. parviflora
× 1
× 5
× 1
× 5
× 1
× 1/10
B. Maurandiae
× 1
× 5
× 1
× 5
× 1
× 1
B. tropaeolifolia
× 1/2
× 1
× 5
B. spadiciflora
× 1
× 1/5

TAB. 11

ones marginiform or angled above, the largest in its extreme phase strongly falcate-ascending and up to 15 mm. wide.—Ecuador.—A. DC. in Ann. Sci. Nat. sér. 4, xi. 119(1859); A. DC. in DC. Prod. xv. pt. 1, 279(1864); Warb. in Engler & Prantl, Pflanzenfam. iii. Abt. 6a, 146(1894); Irmscher, op. cit. ed. 2, xxi. 582(1925). *Begonia hederacea* A. DC. in Ann. Sci. Nat. sér. 4, xi. 120(1859); in DC. Prod. xv. pt. 1, 280(1864). Tab. 11.

ANTIOQUIA: Támesis, Feb. 1, 1928, *R. A. Toro 973* (NY, sterile).

CUNDINAMARCA: Prov. de Bogotá, on Monte del Colegio and Tenasucá, alt. 2300 m., June, 1853, *Triana (11)* (Herb. Nac. Colomb.).

CALDAS: trailing on tree-trunks, Caldas, alt. 2500 m., 1918, *Dawe 765* (NY, US); stream-margin, edge of forest, "Pinares", above Salento, Cordillera Central, alt. 2700-2900 m., Aug. 2-10, 1922, *Pennell 9339* (G, NY, US); same, in clearing, *Pennell 9356* (G, NY, US); mossy forest, Cerro Tatamá, Cordillera Occidental, alt. 3200-3400 m., Sept. 8-10, 1922, *Pennell 10506* (NY, sterile).

CAUCA: Alto de Pesares, Popayán, alt. 2500-2800 m., *Lehmann 5934* (CM); forest, "Canaan", Mt. Puracé, Cordillera Central, alt. 3100-3300 m., June 11-13, 1922, *Pennell & Killip 6685* (G, NY); Cordillera Central, east slope near the crest, valley of Río San Marcos, between Jardín and San Rafael, alt. 2700-2900 m., July 25, 1943, *Cuatrecasas 14782* (G).

NARIÑO: Altaquer, Barbacoas, alt. 1000 m., *Triana 3039* (Kew, **type**, Killip neg. 620; NY, isotype of *B. hederacea;* CM, frag.); Río Cuaiquer, May, 1876, *André 3315* (NY).

PUTUMAYO: El Encano, Laguna de la Cocha, Páramo "El Tábano", alt. 3300 m., Aug. 10, 11, 1939, *H. García B. 7795* (US).

Specimens with peltate leaves but otherwise identical:

CALDAS: woods, La Línea, Quindío, alt. 3200 m., Feb., 1937, *Dryander 2134* (US).

VALLE: forest, La Cumbre, Cordillera Occidental, alt. 1800-2100 m., May 21-25, 1922, *Pennell & Killip 5881* (G, NY).

CAUCA: ravine in forest, "San José", San Antonio, Cordillera Occidental, alt. 2400-2700 m., July 1, 1922, *Pennell 7612* (G, NY, US); forest, "La Gallera", Micay Valley, Cordillera Occidental, alt. 2200-2600 m., July 1, 1922, *Killip 8009* (NY); Cordillera Occidental, Cerro de Munchique, west slope, at the mouth of Río Tambito, alt. 2000-2500 m., July 16, 1939, *Pérez & Cuatrecasas 6221* (US).

From *B. tropaeolifolia*, with which it is most often confused, *B. Maurandiae* may be distinguished by its dentate (rather than denticulate to subentire) leaves, its dentate (rather than entire) tepals and its few-flowered inflorescence. Some specimens of *B. Maurandiae* bear peltate leaves, but since the other characters are typical there is no question of their affinity. The capsule-wings are very variable throughout the species but there is no basis for even varietal distinction.

38. **Begonia (§ Gobenia) tropaeolifolia** A. DC. Branching vine, branches slender, cortex pale gray, friable, glabrous; leaves symmetrical, peltate, ovate to suborbicular, short-acuminate, rounded at base, 3-5 cm. long, 8-nerved, obscurely dentate, glabrous, petioles 3-7 cm. long, stipules persistent, ovate, entire, brown, 4-7 mm. long; cymes axillary, many-flowered, peduncles 4 cm. long, bracts persistent, elliptic, 2-4 mm. long; staminate tepals 4, entire, the outer suborbicular, the inner shorter and obovate; anthers globose, on a short column; pistillate flowers unknown.—Ecuador.—A. DC. in Ann. Sci. Nat. sér. 4, xi. 120(1859); in DC. Prod. xv. pt. 1, 280(1864). Tab. 11.

CUNDINAMARCA: "In Novae Granatae, prov. Bogotá, Monte del Colegio (Triana! n. 3637)" (BM, **type**-collection; G, phot. (Killip neg. no. 621); near Salto de Tequendama, July, 1919, *Bro. Ariste-Joseph A. 406* (US); forest, Salto de Tequendama, alt. 2500 m., Oct. 1-3, 1938, *Cuatrecasas 68* (US); same locality, dependent over partially shaded bank, Mar. 8, 1939, *Killip 34034* (US); thickets, between El Salto and El Colegio, alt. 2100-2200 m., Mar. 3, 1940, *Cuatrecasas 8203* (US).

Although often confused with *Begonia Maurandiae, B. tropaeolifolia* may be distinguished by its always peltate and obscurely dentate leaves, many-flowered inflorescence and entire staminate tepals. From both *B. Maurandiae* and *B. spadiciflora, B. tropaeolifolia* may be separated by its cortex which is friable and lustrous gray rather than red and by its very short staminal column. The two latter species are known only from staminate material. Pistillate flowers and mature capsules are needed to determine the true relationships of both species.

39. **Begonia (§ Gobenia) spadiciflora** Smith & Schubert, spec. nov., e fragmento plantae masculinae solum cognita, ramosa, verisimiliter scandens; ramis flexuosis, gracilibus, cortice persistente, ru-

bro-brunneo, dense piloso, internodiis 3-4 cm. longis; foliis peltatis, ovatis, abrupte acuminatis, basi late rotundatis, ad 9.5 cm. longis et 5 cm. latis, 7-8-nervatis, obsolete denticulatis, utrinque sparse pilosis, petiolis 4-9 cm. longis, sparse pilosis, stipulis persistentibus, ellipticis, integris, 6 mm. longis; pedunculo unico cognito axillari, 9 cm. longo; inflorescentia multiflora, laxe cymosa, ca. 2 dm. diametro, glabra, bracteis persistentibus, ellipticis, truncatis, integris, infimis 5 mm. longis; pedicellis 3-4 mm. longis; tepalis masculinis 4, integris, exterioribus ovatis, obtusis, 8 mm. longis, interioribus obovatis, paulo brevioribus; staminibus multis in columna ad 10 mm. alta insertis, antheris ellipticis, sessilibus, connectivo haud producto. Tab. 11.

ANTIOQUIA: Salgar, July 20, 1928, *R. A. Toro 1259* (NY, **type**).

B. spadiciflora is so named because of the spadix-like androecium, the outstanding character of the species. The reddish-brown pilose bark and long peduncle also distinguish the species clarly from *B. tropaeolifolia*.

40. **Begonia (§ Hydristyles) novo-granatae** A. DC. Species known only from fragments, probably herbaceous and subacaulescent; leaves peltate, ovate, obtuse, thin, 8 cm. long, 6 cm. wide, crenulate-setiferous, sparsely pubescent on both sides, petiole pilose, 5 cm. long; peduncle 25 cm. long tomentose, cyme few-flowered, bracts elliptic-oblong, obtuse or subacute, persistently pilose, the lowest 8 mm. long; staminate tepals 8 mm. long, pilosulous, the outer broadly obovate, the inner narrower (3 in number in the only flower seen by A. De Candolle but he believed 2 the normal number), anthers obovoid, the connective not produced; pistillate tepals 5, oblong-obovate; styles much branched with the stigmatic tissue capitate at the branch-ends, placentae bifid, ovuliferous throughout; capsule rounded at base, 8-10 mm. long, 6-8 mm. wide, pilosulous, wings unequal, the largest obtuse, subascending.—Endemic.—A. DC. in DC. Prod. xv. pt. 1, 402, 403(1864). *Begonia rosacea* Linden Cat. 15(1860) nomen nudum; Linden ex A. DC. in DC. Prod. xv. pt. 1, 330(1864) non Putz. (1857).

Note: The type-material is probably in Geneva; it was cultivated by Linden and is said to have come from Colombia. We have not examined it. Material of this species, one of the few of which we have seen no representative material, is much desired.

41. **Begonia (§ Begoniastrum) cucullata** Willd. Perennial succulent herb, caulescent, stoloniferous, glabrous, 0.1-1 m. high; leaves slightly asymmetric, straight, broadly ovate with the base truncate and usually inrolled, obtuse, palminerved, to 10 cm. long and 9 cm. wide, crenate-serrate, ciliate, petiole 25-50 mm. long, stipules persistent, oblong or elliptic, obtuse, 2-3 cm. long, green; cymes axillary, few-flowered, peduncle 3-6 cm. long; bracts persistent, ovate, serrulate, 5 mm. long; pedicels slender; staminate tepals 4, the outer ones suborbicular, 8-13 mm. long, the inner smaller and narrowly obovate; stamens free, numerous, filaments short, anthers elliptic; pistillate tepals 4-5, obovate, styles 3, 2-parted, the stigmatic tissue linear, spiral, continuous, placentae bilamellate, ovuliferous throughout; capsule unequally 3-winged, the largest wing triangular, subacute, seeds acute in the typical variety.—Guiana, Brazil, Paraguay, Uruguay, Argentina. Widely cultivated.—Willd. Sp. Pl. iv. 414(1805); Kl. Begon. 27(1855); A. DC. in Mart. Fl. Bras. iv. pt. 1, 341(1861); in DC. Prod. xv. pt. 1, 292(1864); Herter, Fl. Uruguayensis, 89(1930); Smith & Schubert in Darwiniana, v. 101, fig. 11(1941). *Begonia spatulata* Lodd. Bot. Cab. ii. t. 107(1817). *B. paludicola* C. DC. in Bull. Soc. Bot. Genève, sér. 2, vi. 125, fig. 7(1914).—Tab. 12.

CALDAS: meadow, "La Palmita", west of Armenia, Cauca Valley, alt. 1000-1200 m., July 23, 1922, *Pennell, Killip & Hazen 8618* (G, NY); swale, west of Armenia, Cauca Valley, alt. 1100-1400 m., July 24-25, 1922, *Pennell, Killip & Hazen 8647* (G).

CHOCO: between Carmen de Atrato and Tutunendo (road from Bolívar (Antioquia) to Quibdó, km. 52 to 70), valley of the upper Atrato, alt. 500-600 m., July 25, 26, 1944, *H. García B. 11119* (US).

VALLE: woods, km. 17 on highway beteen Cali and Buenaventura, alt. 2000 m., Oct. 1937, *E. Dryander 2016* (US); open hillside, Río Digua Valley, between La Elsa and Río Blanco, alt. 900 m., Apr. 2-5, 1939, *Killip 34820* (G); woods, mouth of Río Digua, right bank, La Elsa, ravine La Cristalina, west slope Cordillera Occidental, alt. 1000-1150 m., Sept. 30, 1943, *Cuatrecasas 15221* (G).

Begonia cucullata may be readily distinguished by its succulent habit and large persistent stipules. The species is rather variable and much cultivated. The illustration of the habit is taken from Loddiges.

42. **Begonia (? §) tiliaefolia** C. DC. Herbaceous, caulescent, usually prostrate at base and rooting at the nodes; leaves slightly asym-

metric, straight or nearly so, broadly ovate, abruptly acuminate, short-cordate at base, 8-10 cm. long, 6-8.5 cm. wide, palmi-penninerved, crenate, sparsely ferruginous-pilose on the nerves above and densely on the nerves beneath, thin, petioles 2-8 cm. long, pilose, stipules soon deciduous, triangular-oblong, acute, 9 mm. long, glabrous; peduncles axillary, very short to absent, cymes very few-flowered; bracts and bracteoles persistent, ample and concealing most of the flowers, ca. 10 mm. long, crenulate, membranaceous; staminate tepals (only incomplete material seen), entire; stamens few, free, anthers oblong, much longer than the filaments; pistillate tepals 5, oblong, obtuse, 9 mm. long; styles 3, bifid, the stigmatic tissue linear, spiral;; ovary broadly ovoid or subglobose, placentae bilamellate, ovuliferous on all sides; capsule-wings unequal, spreading, narrowly triangular, attached to the upper edge of the capsule.—Ecuador.—C. DC. in Bull. Herb. Boiss, ser. 2, viii. 324(1908).—Tab. 12.

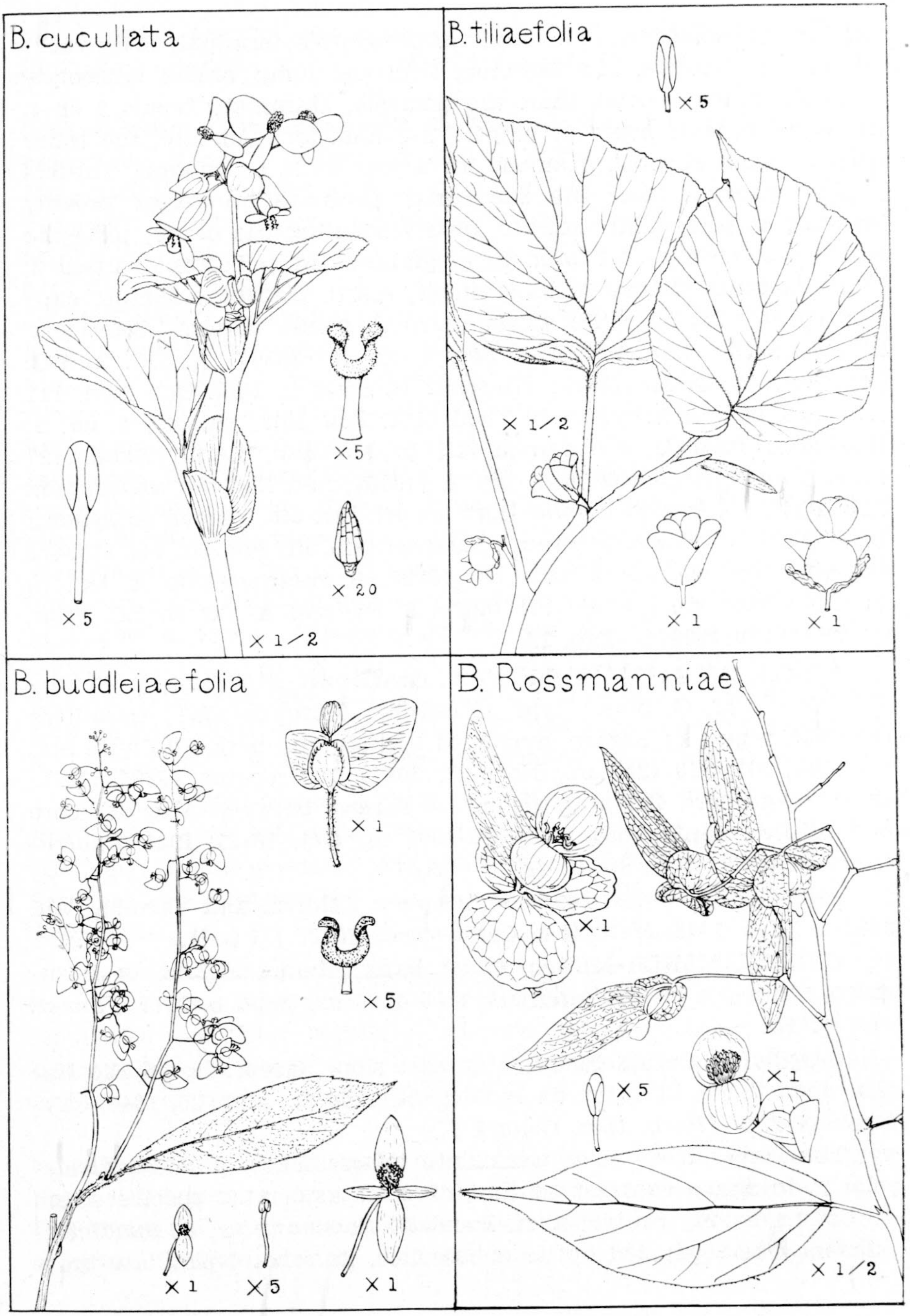
CAUCA: Cordillera Occidental, forest, "La Gallera", Micay Valley, alt. 1400-1500 m., June 29-30, 1922, *Killip 7697* (G, NY, US).

Begonia tiliaefolia may be distinguished by its large persistent bracteoles and the unique position of the capsule-wings; it may also be separated from *B. cucullata* by its somewhat pubescent, abruptly acuminate leaves.

The attachment of the capsule-wings to the upper portion of the capsule suggests relationship in section *Casparya;* however, the wings are unequal (in section *Casparya* the horns are equal); also the styles in *B. tiliaefolia* are bifid rather than multifid as in section *Casparya.*

There is great need for staminate material for study. On only one specimen have we seen a staminate flower and that was in too poor condition to count tepals, although a few stamens were present.

43. **Begonia (§ Pilderia) buddleiaefolia** A. DC. Herbaceous, succulent, 0.3-0.9 m. high; stem slender, erect, branched, the apices as well as the petioles and peduncles ferruginous-tomentose; leaves nearly straight, but strongly inequilateral, narrowly lanceolate or oblanceolate, acuminate, rounded at base with one side attached much lower than the other, 9-26 cm. long, 2-7 cm. wide, finely double-serrate, ciliate, thin, often somewhat bullate, hirsute above except on the veins, hirsute beneath especially on the veins, petioles 6-20 mm. long,


B. cucullata
× 5
× 20
× 5
× 1/2
B. tiliaefolia
× 5
× 1/2
× 1
× 1
B. buddleiaefolia
× 1
× 5
× 1
× 5
× 1
B. Rossmanniae
× 1
× 5
× 1
× 1/2

TAB. 12

stipules lanceolate, 8 mm. long; inflorescences terminal, laxly racemose or paniculate, few-flowered, 7-12 cm. long; bracts lanceolate to ovate, much shorter than the pedicels; staminate tepals 2 or 4, the outer broadly ovate or elliptic, 2-8 mm. long, hirsute, the inner oblong, much shorter; stamens on a low torus or column, anthers elliptic, shorter than the filaments; pistillate bracteoles broadly ovate or elliptic, ciliate-serrate, nearly equaling the ovary; pistillate tepals 4-5, elliptic, 4-7 mm. long, glabrous or pubescent; styles 3, slenderly bifid, stigmatic tissue linear, spiral, placentae simple; capsule cordate at base, its wings unequal, ovate, obtuse.—Venezuela, Ecuador,Perú.—Ann. Sci. Nat. Sér. 4, xi. 141(1859); A. DC. in DC. Prod. xv. pt. 1, 380(1864); Irmscher in Diels in Bibl. Bot. cxvi. 111 (1937); Smith & Schubert in Field Mus. Pub. Bot. xiii. pt. 4, no. 1, 186(1941). *Pilderia urticaefolia* Kl. in Monatsb. Berlin Akad. 127 (1854); idem, Begon. 66, t. 7, fig. A (1855), non *Begonia urticaefolia* Smith (1790). *B. urticaefolia* Hort. ex Kl. loc. cit., nomen in synon.; (Kl.) Warb. in Engler & Prantl, Pflanzenfam. iii. Abt. 6a, 144 (1894); Irmscher, op. cit. ed. 2, xxi. 581(1925). *B. lantanaefolia* A. DC. in Ann. Sci. Nat. Sér. 4, xi. 141(1859). *B. Pilderia* A. DC. in DC. Prod. xv. pt. 1, 380(1864).—Tab. 12.

NORTE DE SANTANDER: Prov. Ocaña, alt. 2100-2400 m. *Schlim 578* (Gen; CM, G, phot.; type of *Begonia lantanaefolia*); Cordillera Oriental, region of Sarare, mouth of Río Margua between Junín and Córdoba, alt. 920-1240 m., Nov. 22, 1941, *Cuatrecasas 13391* (US); woods, Cordillera Oriental, region of Sarare, between Alto del Loro and Alto de Santa Inés, alt. 1800-2200 m., Oct. 18-21, 1941, *Cuatrecasas, Schultes & E. Smith 12413* (US).

ANTIOQUIA: moist roadside, between Valdivia and Yarumal, alt. 2200 m., Feb. 1942, *Metcalf & Cuatrecasas 30127* (U Cal).

CUNDINAMARCA-META: moist bank, shade, Pipiral to Susumuco, southeast of Quetame, alt. 1100-1300 m., Sept. 5, 1917, *Pennell 1721* (NY).

CAQUETA: Cordillera Oriental, east slope, Quebrada del Río Hacha, open woods in Cajón de Pulido, alt. 1700 m., Mar. 26, 1940, *Cuatrecasas 8749* (Herb. Nac. Colomb.).

The laxly racemose or paniculate inflorescence of *B. buddleiaefolia* is in sharp contrast to that of most associated species which do not have long central axes. From *B. Rossmanniae, B. buddleiaefolia* may be separated by its pubescence, its serrate pistillate bracteoles which are not accrescent (undulate or entire and accrescent in *B. Rossmanniae*) and its 5 pistillate tepals (2 in *B. Rossmanniae*).

44. **Begonia (§ Ruizopavonia) Rossmanniae** A. DC. Scandent shrub, essentially glabrous; leaves straight only slightly asymmetric, elliptic, acuminate, rounded at base, 6-10.5 cm. long, 1.9-4 cm. wide, penninerved, serrate, ciliate, petioles 4-17 mm. long stipules deciduous, oblong, acuminate, 3-11 mm. long; inflorescence terminal, thyrsoid, 4-12-flowered, peduncle 1.5-3 cm. long; lower bracts large, obovate or oblanceolate, membranaceous, red, fugacious; pedicels 15 mm. long; flowers rose to brick red; staminate tepals 2, broadly ovate, 6-8 mm. long; stamens free, anthers elliptic, obtuse, shorter than the filaments, the connective produced; pistillate bracteoles 12-15 mm. long, persistent, accrescent, suborbicular, cordate at base, entire to somewhat lobed, exceeding the ovary; pistillate tepals 2, broadly ovate to suborbicular; styles 3, 2-parted, the stigmatic tissue linear, spiral, continuous, placentae bilamellate; capsule orbicular, with 2 very small wings, the third subascending, deltoid to ovate, acute to obtuse, 2-4 cm. long.—A. DC. in DC. Prod. xv. pt. 1, 333(1864); Warb. in Engler & Prantl, Pflanzenfam. iii. Abt. 6a, 147, fig. 44b (1894); Irmscher, op. cit. ed. 2, xxi. 584, fig 254b (1925); Smith & Schubert in Field Mus. Pub. Bot. xiii. pt. 4, no. 1, 199(1941). *Begonia repens* Ruiz ex Kl., nomen in synon., non Vell. nec Lam. *Rossmannia repens* Kl., Begon. 99, t. 9, fig. A (1855).—Colombia and Perú.—Tab. 12.

PUTUMAYO: forest, Umbría, 0°54′N, 76°10′W, alt. 325 m., Oct-Nov., 1930, *Klug 1674* (CM, G); same locality, Dec., 1930, *Klug 1869* (CM, G); moist woods of Río San Miguel, between the ravines of Sipenae and Churruyaco, alt. 400 m., Dec. 11, 1940, *Cuatrecasas 10955* (US).

Begonia Rossmanniae may be distinguished from *B. Cuatrecasana* by its two staminate and two pistillate tepals (rather than four staminate and three pistillate) and by its inflorescence which appears to have a simple axis with only secondary lateral cymes rather than a highly ramified cymose form.

45. **Begonia (? § Ruizopavonia) extensa** Smith & Schubert, spec. nov., e fragmentis solum cognita, herbacea, ramosa, glabra; foliis fere rectis sed valde asymmetricis, oblongo-ellipticis, breviter acuminatis, basi leviter cordatis, 8-11 cm. longis, 3.5-6 cm. latis, crenato-

serratis, petiolis 5-15 mm. longis, stipulis elliptico-ovatis, acutis, ca. 1 cm. longis; cymis terminalibus et axillaribus, ca. 7-16-floris; pedunculis gracilibus, 3-4 cm. longis; bracteis deciduis, ellipticis, 5 mm. longis, integris; pedicellis gracillimis, 15 mm. vel ultra longis; tepalis masculinis 2, anguste ovatis, 16 mm. longis, integris, carnosis, rubris; staminibus multis, toro pulvinato insertis, filamentis brevibus, antheris oblongis, connectivo ultra loculos perlonge extenso; floribus femineis capsulisque ignotis.—Tab. 13.

BOYACA: overhanging streams in thick forest, region of Mt. Chapón, extreme western part of Dept. Boyacá, northwest of Bogotá, alt. 900 m., June 8, 1932, *Lawrence 187* (Mo, **type**; G, NY, **isotypes**).

This distinctive species is known from only one staminate collection. It is unique because of the very elongate anther connective which exceeds the loculi in length. Pistillate material is much desired.

46. **Begonia (§ Ruizopavonia) Cuatrecasana**, spec. nov., frutex scandens; caule glabro, foliis penninervatis paulo asymmetricis, anguste obovatis vel ovato-ellipticis, apice acuminatis, basi cuneatis, undique glabris cum venis primariis subtus prominentibus et venis secundariis reticulatis et prominentibus undique, marginibus serratis in tertia parte superiore reliquis integris, 12.5-15 cm. longis, 4.3-5.6 cm. latis; petiolis 3-4 mm. longis; stipulis oblongo-acuminatis vel ovato-acuminatis, 10-14 mm. longis, 3-6 mm. latis, glabris; pedunculo glabro, lineato, ca. 4.5 cm. longo; inflorescentia cymosa; bracteis primariis persistentibus, stipulis simillimis sed minoribus, bracteis secundariis ovatis vel suborbicularibus, acuminatis, ciliatis ad 14 mm. longis et 5 mm. latis, ad apicem decrescentibus; pedicellis masculinis glabris, 11-15 mm. longis, tepalis 4, duobus exterioribus ovato-acuminatis, basi cordatis, 20-28 mm. longis, 12-15 mm. latis, duobus interioribus elliptico-obtusis, 13-18 mm. longis, 3.5-4 mm. latis, staminibus 11-14, antheris ellipticis, filamentis subaequantibus, connectivo producto, obtuso, bracteolis femineis 2, parte superiore serrulata ovario tegentibus, ca. 15 mm. longis, 11 mm. latis; tepalis 3, duobus exterioribus magnis ovatisque, acutis, 2.5 cm. longis, 1.8 cm. latis, interiori anguste ovato, obtuso, 15 mm. longo, 6 mm. lato; ovario 3-loculato, stylis 3, bifidis, ramis linearibus, stigmatibus spiraliter cinctis; capsula glabra, ala maxima deltoidea, acuta, ascendente, ca. 1.5 cm. longa, 1 cm. lata, duobus alteris minoribus.—Tab. 13.

VALLE: Cordillera Occidental, western slopes; left bank of Río Sanjuniquín, La Laguna, woods, alt. 1250-1400 m., Dec. 10-20, 1943, *José Cuatrecasas 15553* (G, **type**).

We are happy to name this species for Dr. José Cuatrecasas of Cali, Colombia, whose collections are making such a great contribution to the flora of that country. *Begonia Cuatrecasana* has its closest alliance with *B. consobrina* and *B. cymbalifera* which also have four staminate tepals and three pistillate tepals. These three species, as well as *B. Rossmanniae,* all have conspicuous bracteoles at the base of and often covering the ovary. Our new species is distinguished from the others by the great size of the outer tepals of both the staminate and pistillate flowers, by the small number of stamens and by the much longer and more slender style-branches, as well as by the thick leaves with prominent reticulate venation, and presumably, when living, by its very striking orange-red flowers.

47. **Begonia (§ Ruizopavonia) xylopoda** Smith & Schubert, spec. nov., perennis, humilis sed suffruticosa, basi valde lignosa, 3-6 dm. alta; caule erecto, geniculato, pilosiusculo, nodis tumidis; foliis rectis, paulo asymmetricis, elliptico-lanceolatis, acuminatis, basi rotundatis, ad 7 cm. longis, paulo ultra 2 cm. latis, laxe serratis, supra glabris, subtus ad nervos adpresse pubescentibus, petiolis 10 mm. longis, pubescentibus, stipulis oblongis, integris, 10-13 mm. longis, subglabris; pedunculo axillari, gracillimo, 20-35 mm. longo; inflorescentia laxe cymosa, pauciflora, pubescenti, bracteis deciduis, ellipticis, 2-4 mm. longis, apice serrulatis; pedicellis 10-20 mm. longis; tepalis masculinis 2, orbicularibus, integris, 6 mm. longis, albis; staminibus multis, antheris oblongis quam filamentis multo longioribus, connnectivo producto; bracteolis femineis 3, late ellipticis, serrulatis; tepalis femineis 4, perjuvenilibus solum cognitis, valde inaequalibus, suborbicularibus vel reniformibus, integris; stylis 3, multiramosis; ovario late ellipsoideo, placentis bilamellatis; capsulis inaequaliter trialatis, alis ovatis, obtusis, maxima 12 mm. lata.—Tab. 13.

PUTUMAYO: eastern slope of the Cordillera, wet forest between Mocoa and Sachamates, alt. 600-700 m., Dec. 29, 1940, *Cuatrecasas 11400* (US, **type**).

Its comparatively small, straight leaves, 3 bracteoles at the base of each ovary, 4 very unequal pistillate tepals and much branched styles distinguish *Begonia xylopoda* from its closest relatives in the section.

48. **Begonia (§ Ruizopavonia) cymbalifera,** Smith & Schubert, spec. nov., herbacea, caule glabro, lineato; foliis penninervatis, rectis, ovatis, apice acuminatis, basi obtusis vel truncatis, dimidia parte paulo vel non lobata, superficiebus glabris, venis primariis secundariisque subtus pilosis, 10-14 cm. longis, 5-7.5 cm. latis, marginibus magis minusve serrato-denticulatis, dentibus setiferis, petiolis rugosis, glabris, 1.5-2 cm. longis, stipulis mox deciduis, tantum cicatrices visis; gemmis axillaribus hamulis prominentibus formandis, spinis similibus; inflorescentia pedunculata; cymosa, pedunculo glabro, bracteis primariis mox deciduis, tantum cicatrices visis; floribus pedicellatis, pedicellis masculinis 6-9 mm. longis, sparsissime pilosis, tepalis 4, duobus exterioribus foris pilosis, ciliatis, subreniformibus vel suborbicularibus vel paene obovatis, in basi quidpiam cordatis, ca. 5 mm. longis, 9 mm. latis, tepalis interioribus glabris, anguste ellipticis apice obtusis et basi contractis, ca. 5 mm. longis, 2 mm. latis; staminibus numerosis, liberis, antheris ellipticis, connectivo producto; bracteolis femineis ovatis vel orbicularibus laceratisque, 2 vel 3, plerumque cum duobus aequalibus et uno profunde bifido et pergrandi; tepalis femineis 3, duobus exterioribus aequalibus, suborbicularibus, ciliatis et pilosis foris, ca. 5 mm. longis et 7 mm. latis, interiori glabro, elliptico vel anguste obovato, 4-5 mm. longo, 2.5-3 mm. lato; ovario 3-loculato, stylis 3, multo ramosis; capsula glabra vel sparsissime pilosa, ca. 10 mm. alta, alis saepe ciliatis, ala maxima 10 mm. longa, subquadrata, duabus alis ceteris subaequalibus, marginiformibus.—Tab. 13.

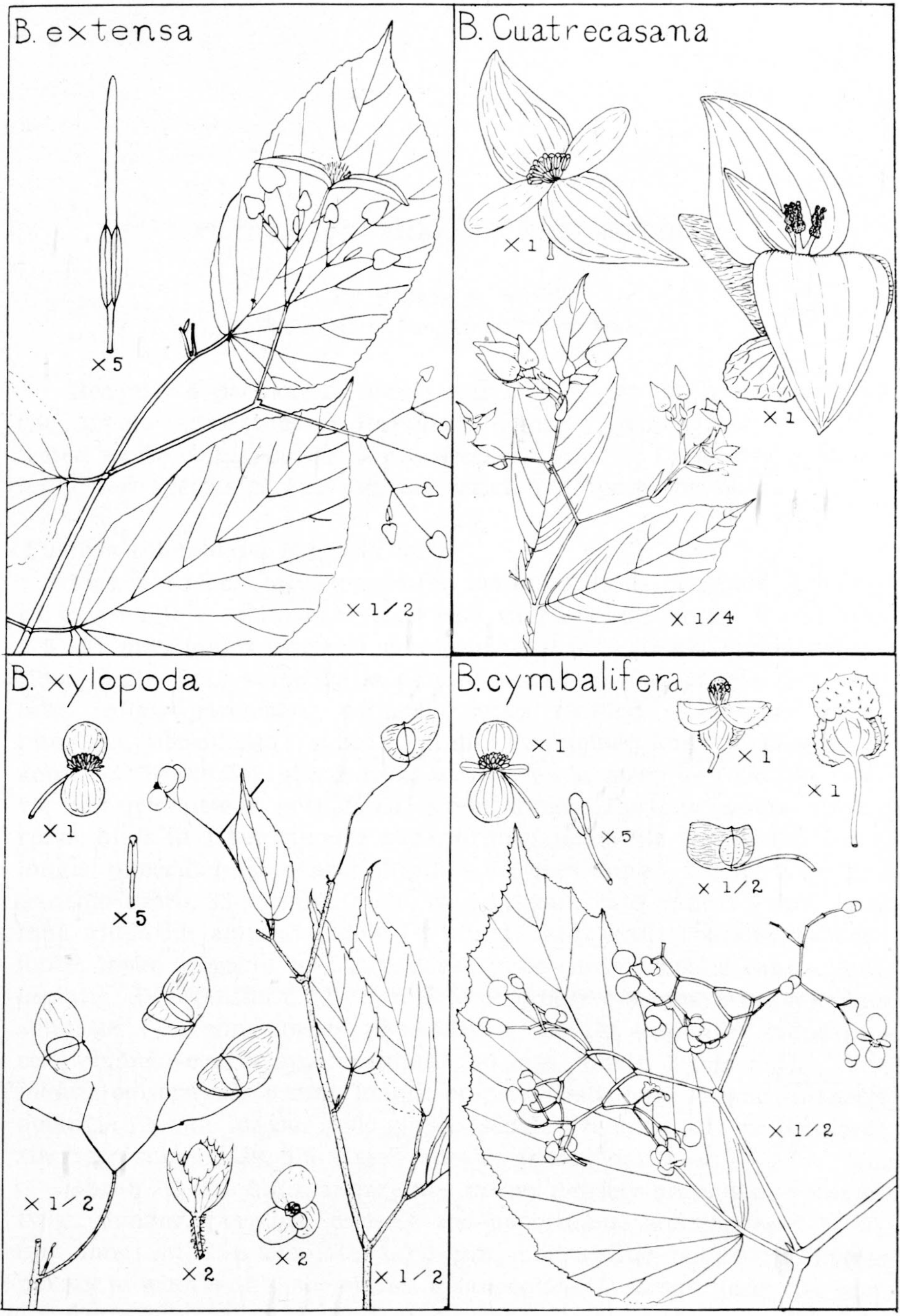
PUTUMAYO: eastern slope of the Cordillera, between Sachamates and San Francisco de Sibundoy, alt. 1600-1750 m., Dec. 30, 1940, *Cuatrecasas 11518* (US, **type**); same locality and date, *Cuatrecasas 11470* (US, **cotype**).

This species is most closely related to *Begonia consobrina* from which it may be distinguished by its penninerved, scarcely if at all, basally lobate leaves (those of *B. consobrina* being pennipalmate), by its pilose, ciliate outer tepals of both the staminate and pistillate flowers and the often ciliate capsule-wings.

Var, **recta** Smith & Schubert, var. nov., a var. *typica* differt foliis paene rectis, subsymmetricis, stylis paulo ramosis.

CALDAS: Cordillera Occidental, Río San Rafael, below Cerro Tatamá, alt. 2200-2500 m., Sept. 7-11, 1922, *Pennell 10328* (NY, **type**; phot. G).

(To be continued).


B. extensa
×5
×1/2
B. Cuatrecasana
×1
×1
×1/4
B. xylopoda
×1
×5
×1/2
×2
×2
×1/2
B. cymbalifera
×1
×1
×1
×5
×1/2
×1/2

TAB. 13